

Appln No. 10/070,077

Amdt date May 26, 2004

Reply to Office action of February 26, 2004

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) Apparatus for detecting [[the]] speed and twist rate in a cable having at least two twisted elongate elements and ~~travelling~~ traveling along a predetermined path, the apparatus comprising a first sensor having a first light source and a first detection means positioned about said path so that the cable interrupts [[the]] a first light path from the first light source to the ~~detector~~ first detection means to cast a first varying shadow on the first detection means as the cable travels along the predetermined path, and means for processing [[the]] outputs of the first detection means with [[the]] an actual speed of the cable to determine [[the]] an actual twist rate for the cable, characterised by a second sensor spaced apart along said path a predetermined distance from said first sensor, the second sensor having a second light source and a second detection means positioned about said path so that the cable interrupts [[the]] a second light path from the second light source to the second detection means to cast a second varying shadow on the second detection means as the cable travels along the predetermined path, and in that the means for processing [[means]] determines said actual speed of the cable from [[the]] outputs of said first and second sensors.

2. (Original) Apparatus according to Claim 1, including for each sensor, a filter having a passband based around a

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frequency corresponding to the speed of the cable along said predetermined path.

3. (Currently Amended) A method for detecting [[the]] speed and twist rate in a cable having at least two twisted elongate elements and ~~travelling~~ traveling along a predetermined path, the method comprising the step monitoring [[the]] a first variation in profile of the cable as it passes a first location along said path to provide a first measurement signal and processing the first measurement signal with a signal representative of [[the]] an actual speed of the cable to determine the twist rate characterised by the step of monitoring [[the]] a second variation in profile of the cable as it passes a second location along said path spaced a predetermined distance from said first location to produce a second measurement signal, and processing the first and second measurement signals to produce therefrom said signal representative of the actual speed of the cable.

4. (New) An apparatus for detecting speed and twist rate in a cable having at least two twisted elongate elements traveling along a predetermined path, the apparatus comprising:

a first light source projecting light along a first light path onto the cable;

a first receiver positioned about the predetermined path and the first light source so as to receive a first shadow cast by the cable as the cable interrupts the first light path from the first light source to the first receiver, the first receiver generating a first frequency signal based on the first cast shadow;

a first filter having a first passband based around a frequency associated with a first speed of the cable, the first

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filter receiving the first frequency signal and generating a second frequency signal; and

a processor processing the second frequency signal and determining a second speed of the cable.

5. (New) The apparatus of claim 4, wherein the second speed is used to adjust an operating speed associated with the cable.

6. (New) The apparatus of claim 4 further comprising:
a second light source projecting light along a second light path onto the cable;

a second receiver positioned about the predetermined path and the second light source so as to receive a second shadow cast by the cable as the cable interrupts the second light path from the second light source to the second receiver, the second receiver generating a third frequency signal based on the second cast shadow;

a second filter having a second passband based around the frequency associated with the first speed of the cable, the second filter receiving the third frequency signal and generating a fourth frequency signal; and

a comparator receiving the second frequency signal from the first filter and the fourth frequency signal from the second filter and generating a difference signal.

7. (New) The apparatus of claim 6, wherein the difference signal is used to adjust an operating twist rate associated with the cable.